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The Effectiveness of Sex Education in the United States

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Despite the widespread availability of sex education programs in the United States, the rate of unplanned pregnancies among women continues to rise, a trend reflected in the number of Navy women who become pregnant during their first enlistment. A literature review was conducted to identify the major variables influencing pregnancy and birth rates among young women, and to determine the effectiveness of traditional sex education programs in reducing the rate of unplanned pregnancy. Traditional classroom sex education has been shown to increase knowledge of sexual subjects and to change attitudes, but has little or no effect on sexual activity, contraceptive use, or teenage pregnancy. The school-based clinic is a promising model that the Navy might, in part, emulate as an intervention strategy to prevent unplanned pregnancies in Navy enlisted women.

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FOREWORD

The following literature review was performed within advanced development work unit R1770 MP039, *Lost Time of Men and Women*. Its purpose was to determine whether sex education, as currently practiced in the United States, is successful at reducing rates of unplanned pregnancy. This investigation was part of a larger effort to determine the impact of pregnancy and single parenthood on the Navy.

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SUMMARY

Problem

Despite the widespread availability of sex education programs in the United States, the rate of unplanned pregnancies among young women continues to increase. As more women enlist in the Navy, this societal trend will be reflected in increased rates of unplanned pregnancies in enlisted women, possibly impacting on Navy readiness.

Objective

The purpose of the literature review was to identify the major variables influencing pregnancy and birth rates among young women, and to determine the effectiveness of traditional sex education programs in reducing the rate of unplanned pregnancy. These factors must be identified before the Navy can design a useful intervention strategy for preventing unplanned pregnancies in enlisted Navy women.

Approach

Journals and books were reviewed with the following questions in mind: (1) What are the factors contributing to the rising rate of unplanned pregnancies in unmarried young women? (2) What is the current status of sex education the the United States? (3) How effective is traditional sex education? (4) Can a well-designed sex education program reduce the incidence of unplanned conception? Are there successful models to emulate? (5) What are the characteristics of sex education programs that change behavior?

Findings

Factors contributing to rising rates of unplanned pregnancies among unmarried young women include: changing values, ignorance of basic facts, negative attitudes toward contraception, and adolescent willingness to engage in risk-taking behavior. Traditional classroom-taught sex education is widespread but inconsistent in coverage and amount of time devoted to the subject. Sex education has been shown to increase knowledge of sexual subjects and to change attitudes, but has little or no effect on sexual activity, contraceptive use, or teenage pregnancy. A promising new model is the school-based clinic, a full-service health clinic operating within a high school environment. Early evaluations indicate that such an intervention may have more success in reducing teenage pregnancy than previous sex education programs.

Recommendations

As more women of child-bearing age enlist in the Navy, pregnancies will increase, possibly impacting Navy readiness. The Navy should attempt to instill a desire to avoid pregnancy and parenthood in its recruits until they are emotionally and financially ready for such commitments. In addition, birth control should be made readily available by providing contraception at all local clinics at no charge.

CONTENTS

INTRODUCTION

Sex education (or "sexuality education," the preferred term) refers to instruction about the physiological, emotional, psychological, and interpersonal aspects of sexuality, including human growth and development, dating, self-concept, emotions, and personal values (Jorgensen & Alexander, 1983). The goals of sex education may be broadly categorized as (1) increasing knowledge, (2) encouraging interpersonal and societal change, which includes reduction of unwanted teenage pregnancy and reduction of venereal diseases (Rogers, Merriam, & Munson, 1983; Voss, 1980), and (3) facilitating personal change and adjustment, which includes the avoidance of maladjustment as well as the facilitation of higher levels of fulfillment. This paper addresses the extent to which the first two of these goals are met through sex education programs in the United States, with particular focus on the effectiveness of these programs in reducing unwanted or unintended pregnancies. While most studies of this nature have been performed on civilian populations, reference will be made to research within the military wherever possible.

BACKGROUND AND PROBLEM

Pregnancy Among Unmarried Women

In the 1970s and the early 1980s, a number of trends, collectively known as the "sexual revolution," coincided, bringing the issue of sex education into public awareness. For example, during the past 20 years, sexual activity has begun at younger ages (Earle & Perricone, 1986; Zelnik & Kanter, 1979), while marriages are entered into later (Forrest, 1987a; Glick, 1984; Norton & Moorman, 1987). In addition, the number of women who are sexually active at the time of their first marriage has increased dramatically (Forrest, 1987a).

Teenage sexual activity is now the norm in this country, not the exception. In 1981, the United States had the highest pregnancy,[1] birth,[2] and abortion[3] rates at every age under 20 when compared to countries of similar culture and economic development (i.e., England and Wales, France, Canada, the Netherlands, and Sweden). The proportion of sexually active teenagers in these countries, however, did not differ appreciably from that of the United States (Jones, Forrest, Goldman, Henshaw, Lincoln, Rosoff, Westoff, & Wulf, 1985). In the United States, ethnicity is related to pregnancy, with much higher birth rates among black, Mexican-American, and Puerto Rican teenagers (Ventura, 1988).

The pregnancy rate for girls between the ages of 12 and 19 in the United States increased by about nine percentage points between 1974 and 1980, yet the birth rate declined by five percentage points (MMWR, 1985). The rising abortion rate very likely

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[1]Pregnancy rate is the sum of the number of births, stillbirths, and estimated abortions and miscarriages in a given year per 1,000 women in a particular age group.

[2]Birth rate is the number of births in a given year per 1,000 women of a given age.

[3]Abortion rate is the number of abortions in a given year per 1,000 women of a given age group.

accounts for much of this decline (Klerman, 1980). One reason that teenage pregnancy remains a topic of such interest is that about 96 percent of the teenagers who carry their pregnancy to term choose to keep and raise their babies (Lachance, 1985 as cited in Hayes & Cryer, 1987). These mothers exact a cost to society in health care, welfare, and education, and may very likely emerge from a dependent adolescence to an unproductive adulthood due to abandoned educations. Nearly half of all government aid to families with dependent children (AFDC) goes to women whose first birth occurred when they were teenagers (Hayes & Cryer, 1987). As many as 40 percent of young women do not complete high school because of pregnancy or marriage, seriously impairing their ability to enter the workforce (Marini, 1984; McClellan, 1987). These women also are more likely to divorce (Norton & Moorman, 1987).

In addition to the problem of teen pregnancy and childbirth, the even higher childbearing rate among unmarried women in their 20s poses a problem. For women not in the labor force, 70 percent of single whites in this age group and 84 percent of single blacks have given birth, and a substantial proportion who are working full time also have been pregnant at some time (Tanfer & Horn, 1985). Pregnancies among unmarried women of all ages are usually reported to be unintentional, as are half or more of those among marrieds (Matthews, 1988). Forrest (1987b) estimated that about 54 percent of all pregnancies in 1982 were not planned, and Tanfer and Horn (1985) found that among 20 to 29 year old unmarried women, 88 percent of the first pregnancies of whites and 80 percent of blacks were not planned. The figures were nearly the same for their most recent pregnancy--89 percent of whites and 77 percent of blacks called the latest pregnancy unintended. Less than one-third of the white women carried these unplanned pregnancies to term, whereas, about three-quarters of the black women carried to term.

Among military personnel, Glenn and Moore (1988) reported that 91 percent of the pregnancies among unmarried active duty sailors were reported as unplanned, but only 17 percent were terminated by abortion. Of those who carried to term, only one-quarter got married before the birth. Comparing his sample of 146 Air Force enlisted women to an age and time-matched sample of civilians, Kruger (1979) found the pregnant military sample significantly more likely to be single, black, experiencing their first birth, and to have proportionally more complications. Royle, Molof, Winchell, and Gerrard (1986), who surveyed Marine Corps women (mean age = 20.2), noted that 18 percent had been pregnant, 60 percent of these pregnancies were unintended and 64 percent were terminated by abortion. Within the Navy, the apparent higher rate of pregnancy among women assigned to ships has led to questions of whether or not the pregnancies are really unplanned. Spillane (1987), listing pregnancy as one of the problems most often mentioned in discussions with women aboard ships, recounts a story of a pregnant sailor in the late 1970s who allegedly provided urine samples to women who were not pregnant so they could obtain discharges and tells of one tender on which 40 percent of the female nonrated personnel became pregnant during the time they were preparing to deploy.

Women in military service who become pregnant experience conflict between their work and parental roles. As a consequence, some leave the service due to perceived unfairness to their co-workers. That is, they feel they are devoting insufficient time to work as a result of the demands of parenthood (Adde, 1988).

Misconceptions and Partial Truths

These trends necessitate examining the knowledge, attitudes, and behaviors that contribute to high rates of unintended pregnancy. It is interesting to note that despite the fact that sexuality pervades the media, and that sex education programs are widespread,

many of those people at the greatest risk of unplanned pregnancy and/or sexually transmitted diseases remain ignorant of basic, important facts. For example, whereas knowledge about contraceptive methods is reportedly high among all age groups of women at risk of unintended pregnancy (Angrist, 1966; Coblinger, 1974; Ryan & Sweeney, 1980), myths, misconceptions, and gaps in information persist with alarming frequency. In Morrison's (1985) review of the literature, 40 percent of 15 to 19 year olds in 1971 did not believe that fertility began at menarche, between 10 and 25 percent of adolescents did not know that pregnancy was possible at first intercourse, and in eight studies done between 1972 and 1983, less than half of adolescents were able to correctly identify the most fertile time of the month. Other erroneous notions included beliefs that sperm can live only one day, that a woman must have an orgasm to become pregnant, that a woman won't get pregnant if she really doesn't want a baby even if she has sex without taking precautions, that birth control is only needed if you have sex regularly, and that you can't get pregnant if you have sex less than once a week.

Of particular interest is the knowledge gap about the time of greatest risk for conception found by Zabin, Kantner, and Zelnik (1979). When 15 to 19 year old women were asked to identify the time of greatest fertility, only two-thirds of whites and about one-fifth of blacks answered correctly. Subjects who indicated they had had intercourse without using a birth control method were asked to indicate their pregnancy intention and reason for nonuse of contraception. Sixty-five percent of those not trying to get pregnant said they did not use contraception because they believed they could not get pregnant.

Among military personnel, Royle et al. (1986) found that large proportions of both first-term and recruit Marines also were uninformed or confused about effective contraception. Similar to their civilian counterparts, less than one-third of female recruits and first-term male Marines could correctly identify the time of the month when a woman is most fertile. Less than half knew the likelihood of pregnancy when no contraceptive method was used, and health risks and side effects of the pill were greatly overestimated. The authors concluded that this pattern of misinformation could explain the high unintended pregnancy rates. As found in civilian studies, women Marines were generally better informed than men.

Negative Attitudes Toward Contraception

Confusion about reproduction and misinformation about contraceptive use are confounded by problematic attitudes and anxieties. Adolescents hold negative, neutral, or mixed feelings about contraception, including doubts about efficacy, concern about the effect on pleasure, concern about convenience, safety, side effects, anticipation of feeling guilty, ambivalence about sexuality, and the fear of others knowing of their use (Morrison, 1985; Beck & Davies, 1987). Freeman, Rickels, Huggins, Mudd, Garcia, and Dickens (1980) discussed the importance of male attitudes, with the finding that females often acquiesce to the wishes of their partners in sexual activity, while at the same time males delegate responsibility for preventing pregnancy to females. Fifty-eight percent of high school students either believed or suspected that the pill was harmful and 64 percent believed that "a girl would feel 'used' if her boyfriend knew she used contraceptives," (p. 791). This latter attitude was echoed in a study by Finkel and Finkel (1975), in which two-thirds of teenage men believed that using contraceptives makes sex seem preplanned and one-third said they would not want their friends to know they used condoms. Morrison (1985) also reported additional reasons commonly given for not using contraceptives: they were embarrassing to buy or use, messy, or unnatural. These attitudes appear to be held widely and strongly. Coupled with this distaste for contraception or inability to admit the need is the low level of commitment seen as prerequisite for intimacy. The majority of

high school students in Zabin, Hirsch, Smith, and Hardy's (1984) sample did not feel that a relationship stronger than just "dating" was necessary to initiate sexual activity and men reported that even weak relationships were sufficient for coitus. College samples also exhibited male, female differences; Earle and Perricone (1986) found that women were more concerned about commitment between sexual partners than men. Clark, Zabin, and Hardy (1984) found that, although about 90 percent of the black adolescent males in their sample recognized that contraceptive use is a shared responsibility, over half condoned unprotected sex.

According to Royle et al. (1986), attitudes toward contraception among Marine Corps personnel are generally positive, which is the opposite of that found among young civilians. However, men were less positive than women toward using contraception and both genders were concerned about interference with pleasure when using contraceptives and about the safety of the pill. These attitudes could affect actual usage of contraceptives in light of the Freeman et al. (1980) finding that women tend to acquiesce to their sexual partners with respect to contraceptive use, too often resulting in nonuse.

Zabin et al. (1984) found that among teenagers the "best age" for marriage (23.4 years for blacks, 22.4 years for whites) was older than the "best age" to have a baby (21.6 years for blacks, 21.7 years for whites). This study reveals the glaring inconsistency between attitudes and behaviors of teenagers, who stated that sex is wrong before marriage, contraception is a joint responsibility, and teen parenthood is problematic, but whose actual behaviors were much different. Of those with sexual experience, one-quarter of both men and women say sex is wrong before marriage. Of those who feel contraception is the responsibility of one or both partners, 34 percent reported they used no method at last intercourse. One-quarter of those who said they would only have sex with contraception also reported using no birth control method at last intercourse. This disparity between stated belief and actual behavior is explained by Kanfer as resulting from "absence of the self-reflection that is necessary for adequate self-control" (in Beck & Davies, 1987, p. 359).

Confounding the fact that young people express attitudes inconsistent with their behavior and are negative or ambivalent about contraception is their willingness to take risks. This willingness is well documented--accidents are their leading cause of death (U.S. Department of Health and Human Services, 1980, in Lewis & Lewis, 1984). Many of these deaths can be traced to peer pressure, which begins as early as grammar school. Despite known consequences, teens respond to dares, and challenges to engage in sexual acts ranks third among the four most commonly made dares (i.e., 22% violence, 12% personal risk, 10% sexual acts, 10% stealing) (Lewis & Lewis, 1984).

This teen risk taking is exacerbated by the inability or unwillingness to anticipate consequences of behavior. Only 35 percent of black adolescent high school students felt that becoming a parent at that stage of their lives would have negative consequences (Freeman et al., 1980), and 22 percent felt their lives would be better or no different. From their study of sexually active teen women, Zelnik and Kantner (1979) concluded that some just "did not consciously consider whether they were or were not likely to become pregnant" (p. 295). Some adolescents also may feel they are immune from unintended pregnancy, based on a perception of their own uniqueness or on having been lucky in the past (Cvetkovich, Grote, Bjorseth, & Sarkissian 1975, in Beck & Davies, 1987). Morrison (1985) pointed out that nonuse of contraceptives among adolescents, in part, is explained by their inability to anticipate need for them and concluded that this is a powerful predictor of their behavior. This "it can't happen to me" attitude was demonstrated in a test-retest study of condom use among sexually active 14 to 19 year olds in San Francisco.

Despite being surrounded by an explicit "safe sex" campaign, teens continued to have multiple sex partners and did not increase their use of condoms. In fact, the women continued to defer to their partners in the decision not to use condoms, while the men's intentions to use condoms decreased over the one year period of the study (Kegeles, Adler, & Irwin, 1988). Not only do teens feel invulnerable to pregnancy, they also feel immune to sexually transmitted diseases.

Regardless of attitudes toward contraception, unprotected sex is the reality among American youth. Researchers have found varying mean lengths of time between first intercourse and use of a contraceptive--from about 8 months (Tanfer & Horn, 1985) to 13 months (Kisker, 1984), with some teens reporting going unprotected for as long as 24 months. This is consistent with Tanfer and Horn's (1985) finding that 21 percent begin using a method only after experiencing a pregnancy. In the Zelnik and Kantner study (1979) of 15 to 19 year old women, nearly one-third had sexual histories but no contraceptive experience. Given that "...one-half of all initial premarital teenage pregnancies occur in the first 6 months of sexual activity" (Zelnik & Kantner, 1979, p. 289), the number of pregnant adolescents should be no surprise.

To summarize, sexual activity in teenagers is the norm. It begins at an early age and, in an era of delayed marriage, pregnancy rates for teenage girls are increasing as are births among single women in their 20s. Most pregnancies of unmarried women are not planned, although some researchers believe that these "unplanned" pregnancies actually have all the appearances of being intended (Cohen, 1983). While information about sexual matters seems readily available, teenagers often hold misconceptions. They are likely to hold negative attitudes toward the use of contraception and are likely to engage in unprotected sexual intercourse, especially during the first months after initiating such behavior.

Given these realities, the need for sex education is clear. This literature review will, therefore, consider the following questions: (1) What is the current status of sex education in the United States? (2) How effective is traditional sex education? Can a well-designed sex education program reduce the incidence of unplanned conception? Are there successful models to emulate? (3) What are the characteristics of sex education programs that change behavior? At the conclusion, practical suggestions for what the Navy can do to increase the likelihood that sex education programs will prove effective will be presented. The studies considered in this literature review will be restricted to those dealing with programs targeting the problem of teenage and unwanted/unintended pregnancy. Therefore, courses that are designed to educate professionals (e.g., nurses learning about sexuality in the disabled), that deal with sexuality in disabled populations, or that are aimed at the correction of sexual dysfunction will not be considered.

TRADITIONAL SEX EDUCATION IN THE UNITED STATES

Between the late nineteenth century and the present, numerous models of sex education have been tried and have proven ineffective. Most of these models have stressed the importance of knowledge about sexual issues, focusing on the dangers of teenage sexuality or, as Fine (1988) states, the discourse of "sexuality as victimization."

Scales, in his 1986 review of the sex education literature, concluded that:

> ...sex education programs can increase knowledge, but they also have relatively little impact on values, particularly values regarding one's personal

> behavior . . . programs do not affect the incidence of sexual activity. . . . Programs certainly do not appear to have as dramatic an impact on behavior as professionals once had hoped. (p. 422)

It is not surprising that the effectiveness of sex education has been limited. For years, polls have shown that about 80 percent of Americans favor sex education in the public schools (Leo, 1986), yet Americans continue to feel ambivalent regarding sexual issues, resulting in a half-hearted commitment to the practice of sex education. A good example of this ambivalence was the refusal by all three major television networks to run a public service announcement designed by the American College of Obstetricians and Gynecologists to combat teenage pregnancy until the word "contraceptive" was eliminated. These same networks, however, regularly air programs with relatively explicit sexual content (Wallis, 1985). Scales (1987) believes that this weak commitment does not so much reflect a debate over teen pregnancy (and whether sex education contributes to it) as it reflects a debate over whether teens should be sexually active. This debate has fueled the sex education controversy in the United States since the beginning of the sex education movement. In the late nineteenth century, even educators who considered themselves progressive were conservative on moral issues.

> . . . Their primary aim was not to encourage sexual adjustment but to sustain an old morality that demanded the repression of all sexual activities except those designed for procreation. (Strong, 1972, p. 136)

In a similar voice, present opponents of sex education maintain that it increases the likelihood of sexual activity and pregnancy among teenagers (Marsiglio & Mott, 1986). Conservative spokeswoman Phyllis Schlafly claims sex education ". . . is the cause of promiscuity and destroys the natural modesty of girls'" (Leo, 1986, pp. 54-55). California legislation requiring that abstinence be emphasized as the only 100 percent effective way to guard against sexually transmitted diseases and unwanted pregnancy, signed on September 26, 1988 (Shuit, 1988) symbolizes the lobbying power of those who hope to prevent teenage sexual activity more than they hope to prevent teen pregnancy.

The half-hearted commitment to sex education results in widespread availability but uneven implementation. Although about 80 percent of public-school children in major United States cities take some kind of sex-education course, only Maryland, New Jersey, and Washington, DC require sex education in all schools (Leo, 1986). Such programs may be numerous but vary considerably in terms of material covered, length of course, expertise of teacher, etc. Course titles range from "sex education" to "family life education" to "human growth and development" to "health education." In their 1984 Urban Institute survey of large school districts, Sonenstein and Pittman found that few schools offered separate sex education courses; most were suffused within other subjects such as health, home economics, science, or physical education and were taught by teachers who were specialists in other academic subjects. Thus, students are rarely taught by experts in the area of sex education, and may receive instruction from teachers who are uncomfortable dealing with sexual issues in the classroom. These researchers also found wide variation in the amount of instructional time allocated for sex education. Most elementary school programs entailed 5 or fewer hours of instruction per year, while over half the junior and senior high school programs involved only 6 to 20 hours of instruction annually. This survey concluded that if "comprehensive" sex education is defined as 75 percent of students taking at least 10 hours of classes covering a long list of subjects by the 9th grade, then only about 15 percent of students could be said to have taken a comprehensive course (Sonenstein & Pittman, 1984).

Even among supporters of sex education in schools, there is disagreement over curriculum. Kenney and Orr (1984) and Orr (1982) reported that the most frequently taught topics in school sex education programs were anatomy and physiology, pregnancy and childbirth, and sexually transmitted diseases. Sonenstein and Pittman's (1984) Urban Institute survey reported that while 75 percent of the programs studied also provided information about contraception, abortion, and teenage pregnancies, these topics were not covered in depth: only 60 percent of the districts devoted one or more class periods to birth control, although 82 percent of the districts devoted at least that much time to the study of body changes during puberty. More controversial topics such as masturbation, homosexuality, and sexual pleasure are covered less frequently (Watter, 1987; Whatley, 1987). Skirting such controversial topics may be a way of avoiding a charge of teaching "values" or may reflect teachers' discomfort with discussing sexual issues. Fine (1988), however, found adolescent girls very interested in learning how to view their sexuality positively, but when they look to their teachers for such information they rarely find it.

As indicated by the global titles assigned to many of the courses, sex education programs often attempt to cover a great deal of factual material in a short amount of time. For example, Benson, Perlman, & Sciarra (1986) evaluated the Discovery program, administered to inner-city children by medical student volunteers. The program consisted of two separate 1-hour presentations. The first hour dealt with the consequences of adolescent childbearing, male and female sexual anatomy, menstruation, conception, pregnancy, and contraception. The second hour covered commonly asked questions about sex, ranging from orgasms to masturbation. Abortion was defined briefly and sexually transmitted diseases were discussed. Emotional and physical changes in puberty were considered, and the last segment of the hour was devoted to the idea of self-respect. One would wonder how all of these topics could be covered satisfactorily in such a short space of time.

HOW EFFECTIVE IS TRADITIONAL SEX EDUCATION?

Evaluation of the effectiveness of sex education has focused on change in three areas: knowledge, attitudes, and behavior. Effectiveness studies generally fall into one of two categories. In the first category of studies are reports of a single sex education program (e.g., Gunderson & McCary, 1980). These studies typically use an experimental or quasi-experimental design to evaluate effectiveness; changes in a treatment group (those who received sex education) are compared to changes in a control group. It is not uncommon, however, for even fairly recent and widely cited studies to use a pretest-posttest design with no control group (Finkel & Finkel, 1985). Many of these studies share a number of weaknesses: (1) when a control group is used, subjects in the experimental and control groups are rarely randomly assigned; (2) very few of the studies measure long-term effectiveness; (3) poorly designed and inadequate measuring instruments are used; and (4) statistically significant increases in knowledge are not necessarily large increases nor do they necessarily translate into changes in attitudes or behaviors (Kirby, 1980).

The second type of effectiveness study utilizes a survey design. Superintendents or principals have been surveyed about district or site programs (e.g., Sonenstein & Pittman, 1984), primarily to study the availability of sex education in a particular setting. Other studies have polled teenagers, who are asked to recall the sex education they have received, and this information is then associated with knowledge, attitude, and behavioral measures. These reports are usually small pieces of much larger surveys (e.g., Marsiglio & Mott, 1986: data from National Longitudinal Survey of Work Experience of Youth). This last method has two major weaknesses: first, surveys cannot easily control for

confounding factors such as normal maturation processes; and second, especially in early surveys, researchers have not asked sufficient questions about sex education sources, making it impossible to estimate how much sex education was actually received in the classroom (Kirby, 1980).

With these cautions in mind, studies of sex education effectiveness will be reviewed with a focus on more recent representative studies, if available, as studies since the early 1980s have attempted to deal with some of the methodological weaknesses described above. Only school-based programs will be considered. It should be noted, however, that sex education programs are also conducted by a variety of community and religious organizations. Scales and Kirby (1981) may be referred to for a review of 27 exemplary nonschool-based programs; these programs have not been adequately evaluated, therefore, effectiveness cannot be assessed. Success in dramatically reducing teenage pregnancy has also been reported in a recent review of a community-wide sex education program instituted in a rural section of South Carolina (Vincent, Clearie, & Schluchter, 1987).

Numerous studies (Kilmann, Wanlass, Sabalis, & Sullivan, 1981; Kirby, 1980; Dawson, 1986; Engel, 1983; Finkel & Finkel, 1985; Gunderson & McCary, 1980; Herz, Reis, & Barbera-Stein 1986; Parcel & Luttman, 1981) have demonstrated that instruction in sex education increases knowledge about sexuality issues. For example, Benson et al. (1986) evaluated Discovery, a sex education program for inner-city junior high school students. Knowledge was measured by a 20-item true/false and multiple-choice test before exposure to the program, 5 days after exposure, and 8 to 12 weeks later. Students from the schools included in the experimental group (N = 1,133) demonstrated an average of a 32 percent gain over their pretest scores following presentation of the Discovery program. The control group, tested three times within a 2-month period, showed no increase in knowledge. The experimental group retained the new knowledge at the third administration of the test. Older females and students from better socioeconomic backgrounds demonstrated a greater degree of knowledge on the pretest, but these demographic variables did not affect the ability to learn, since all groups increased their original scores by about the same proportion. While the results of this study were encouraging, the average increase in knowledge amounted to 3 or 4 items on a 20-item test; there is no way of assessing whether this increase in knowledge has practical value for the individual in terms of changes in attitudes or behavior.

Herz et al. (1986) investigated the impact of three variations of a family life education program for inner-city, black 7th and 8th graders. The three versions differed in exposure time, topics, instructional methods, and teacher quality. Although all three courses were designed with the objective of reducing unwanted teen pregnancies, students in the more intensive course tested better on posttest items on reproductive physiology, contraception, and the consequences of teen pregnancy and parenthood. This intensive class met during the regular school day for a total of 10 instructional hours, which did not differ from the other two classes. However, it did differ in other substantive ways from the two comparison classes, which consisted primarily of didactic lectures. Curriculum in the more intensive class focused on understanding values and attitudes and included a film on the right to say "no," followed by a discussion. Through role playing, students explored feelings in dating or sexual activity scenarios and played out conversations with parents. A group decision making activity was devoted to the topic of personal responsibility, and lectures were informal and encouraged a question and answer format. The comparison classes lacked the post-film discussion, the role-playing, and the question-answer format. The 25 subjects from the more participative class exhibited significantly higher scores on a 13-item posttest of reproductive knowledge and on awareness of contraceptive methods,

and proportionally more of these students responded on the posttest that "both of us" are responsible for using some kind of birth control.

While Finkel and Finkel (1985) demonstrated that sex education on the high school level could influence knowledge of sexuality, knowledge in critical areas continued to fall short after the program. For example, students increased in their knowledge of human genetics, but continued to do poorly on questions regarding fertilization. At posttest, almost 71 percent of the students did not know that a female's time of greatest risk for pregnancy is not just before her monthly period.

A few studies (Finkel & Finkel, 1985; Hoch, 1971; Gunderson & McCary, 1980; Parcel & Luttman, 1981; Zuckerman, Tushup, & Finner, 1976) have considered changes in attitudes as part of the sex education evaluation process. In general, these studies indicate that students become more tolerant of the sexual practices of others, if this was an explicit goal of the course (Kirby, 1985). However, and perhaps more important, the courses have little impact on the students' beliefs about their own sexual behavior (Adame, 1985; Kirby, 1985). An early study by Hoch (1971), although possibly contaminated by experimenter effects, reported that while high school students did not become more permissive in their attitudes, they did become more confident in their ability to make future decisions about their own sexual behavior, and more liberal in their thinking about such issues as population control, birth control, abortion, and sexual deviation. Gunderson and McCary (1980) reported that a sex education course for college students was associated with reduction of sexual guilt and inhibitions and a healthier, more comfortable, and responsible attitude toward sex, while maintaining traditional values of love and fidelity. In their study of an eight-session sex education course for eighth graders, Parcel and Luttman (1981), while reporting a significant increase in knowledge among students who attended consistently, found no change in level of guilt or number of sexual concerns expressed.

Research on the relationship between sex education and behavior has proved disappointing. Stout and Rivara (1989) critically reviewed the sex education literature and concluded that ". . . there is little or no effect from school-based sex education on sexual activity, contraception, or teenage pregnancy" (p. 375). Kirby (1984) reported on a national study designed and partially funded by the Centers for Disease Control, which evaluated a number of different sex education programs, representing a variety of approaches. The study found that the courses did not appear to affect the incidence of sexual intercourse. This conclusion, echoed in a number of other studies (Dawson, 1986; Marsiglio & Mott, 1986; Spanier, 1978) should be somewhat reassuring to those who believe sex education encourages promiscuity. A second major study by Zelnik and Kim (1982) analyzed data from two surveys of United States teenagers, and found no consistent and significant relationship between sex education and engaging in sexual intercourse.

Zelnik and Kim (1982) also studied contraceptive behavior and found few differences in exposure to sex education among those women who used contraception reliably and those who did not. However, they did uncover a possibility that sex education might be associated with lower pregnancy rates and also found that, in most of the subgroups studied, women who had had sex education were more likely to have used some method of contraception at first intercourse. This study was hampered by the fact that they could not determine what proportion of the survey respondents had had sex education before they initiated intercourse. This is a problem with such surveys in general. In fact, based on an analysis of data from the 1984 National Longitudinal Survey of Work Experience of Youth, Marsiglio and Mott (1986) concluded that no more than half of those who began having sex by age 18 had had a course in sex education; no more than two-fifths had had

instruction on birth control. With adolescents initiating sex earlier and earlier, the probability that they have been exposed to adequate sex education and contraceptive information at the time they become sexually active becomes less likely.

More recent studies continue to support these earlier conclusions. Dawson's (1986) analysis of National Survey of Family Growth data found no consistent relationship between exposure to contraceptive education and initiation of sexual intercourse, nor did sex education exert a significant effect on the risk of premarital pregnancy among sexually active teenagers. However, Dawson did find that sex education influenced contraceptive knowledge and behavior; sexually active women with exposure to pregnancy and birth control information knew how to use more contraceptive methods and were more likely to use birth control than teenagers who did not have such an education. In addition, among women who had ever used contraception, those who received contraceptive education before their first sexual encounter were more likely to use birth control at the time of that event. Data from the 1981 National Survey of Children did show that 15- and 16-year olds who had been exposed to sex education were less likely to be sexually experienced than those who did not have this exposure (Furstenberg, Moore, & Peterson, 1985).

Kirby (1985) considers unrealistic the notion that sex education alone should prevent teenage pregnancy and offers reasons why sex education programs have limited impact on behavior:

1. The knowledge increase reported by many evaluations of sex education programs is often small and long-term retention is often not measured.

2. Knowledge, in general, has little impact on behavior--even though adolescents may acquire important knowledge, they may not apply this knowledge to their own behavior.

3. Many sexually active teenagers do not have sex very frequently and, when they do, it often is a surprise event.

4. Increased knowledge does not necessarily increase the perception of risks associated with sexual activity.

5. Factors other than knowledge affect teenage sexual behavior. Influences such as socialization, peer pressure, sexual desire, and need for affection are often much stronger forces than the mere presence of additional knowledge and much more likely to influence behavior.

SEX EDUCATION THAT CHANGES BEHAVIOR

Countries with low teenage pregnancy rates, such as Sweden and the Netherlands, have comprehensive early sexuality education and/or easy access to contraception. They create a sexuality-positive environment instead of debating whether teenagers should be having sex. There is an acceptance of teenage sexual activity but society does not condone teenage pregnancy and provides the necessary tools for adolescents to avoid pregnancy. It has been said that teenagers in the Netherlands would never consider having sex without the use of birth control, since this belief is ingrained in them from childhood (Wallis, 1985).

It would be rare to find in the United States a program that creates a "sexuality-positive" environment. The most successful model of sex education in the U.S. creates, at the least, a "sexuality-acceptance" atmosphere. This model is known as the school-based clinic program. The original clinic was started at Mechanic Arts High School in St. Paul, Minnesota in 1973. It was a full-service health clinic, which offered everything from sports physicals to immunizations to family planning services (Wallis, 1985). Since the early 1970s, a number of other clinics have been started at high schools across the country. In his 1986 article, Kirby reported that more than 60 comprehensive clinics had already opened and there were at least 76 other clinics planned. These clinics share certain features: (1) they provide direct comprehensive primary care, not just family planning services; students can utilize the clinic without others knowing what services they require; (2) they commonly are run by established medical providers, rather than the schools, and are staffed by nurse practitioners or physicians; therefore, (3) they can prescribe and/or dispense medications. The clinics are accessible, the visits are free or have a minimal annual cost, they can provide integrated health care and offer confidential services (Kirby, 1986).

Data from the St. Paul Maternal and Infant Care Project have indicated a continuing decline in birthrates in the four participating high schools (Dryfoos, 1985). Zabin, Hirsch, Smith, Streett, and Hardy (1986) reported on a school-based program among Baltimore inner-city junior and senior high school students, supported by Johns Hopkins School of Medicine. Twenty-eight months into the program, the students with access to the program had a 30 percent decline in the number of pregnancies, while comparable students not exposed to the program had a 58 percent increase. In addition, students in the program who were virgins delayed initiating intercourse 6 months longer than students who were not in the program (Zabin et al., 1986). Dryfoos (1985) states that other benefits of these school-based programs are increased attendance (a clinic-based nurse can dispense medication for problems that would ordinarily cause a student to leave school) and decreased student dropout. One reason for the success of these clinics is that clinic workers follow up on students, making sure they show up for clinic appointments and continue the use of contraceptives obtained at the clinic.

Kirby (1986) also lists the following overall effects:

1. The percentage of female students utilizing the family planning services of these clinics increased from 0 percent to about 27 percent.

2. The contraception continuation rates were 93 percent for 12 months and 82 percent for 24 months.

3. The birth-rates among non-Southeast Asians dropped by about one-half.

4. Eighty-seven percent of all adolescent mothers stayed in school.

5. The repeat pregnancy rate of adolescent mothers was 1.4 percent within 2 years or until graduation.

Kirby (1986) concludes that the limited research currently in existence suggests that the school-based clinic is a promising model for addressing the problem of teenage pregnancy.

Despite positive evaluations of its effectiveness, however, the clinic model attracts controversy. The Roman Catholic Church has objected to the clinics' birth control

services and a few black leaders in Boston and New York City have denounced the clinics as racist, as these clinics are generally only found in inner-city schools (Leo, 1986). According to Scales (1986), even some sexuality educators express reservations about so closely linking education with contraceptive services.

SOME PRACTICAL SUGGESTIONS

The problem of teenage pregnancy is similar to that of pregnancy in single enlisted Navy women. In both cases, the women are young, experiencing an unplanned (or planned for the wrong reason) pregnancy, and limiting their opportunities should they decide to keep and raise the child. As Dryfoos (1984) notes, for a teenage girl to get through adolescence without becoming pregnant, she must have both the capacity and the desire to prevent pregnancy. Capacity comprises the knowledge typically imparted in sex education programs; however, if contraception fails, it is also the availability of pregnancy testing and abortion, if desired. If a girl does not have the motivation to postpone motherhood, however, knowledge will have little effect.

Therefore, to be effective, a sex education program must include three components: it must impart knowledge; it must convince participants that unwanted pregnancy is likely when sex is unprotected and must instill a desire to avoid pregnancy; and, it must provide readily available health services, including contraception, pregnancy testing, and referral services for abortion, adoption, or prenatal care.

1. It must impart knowledge.

As mentioned earlier, numerous studies have demonstrated that a sex education class can increase knowledge about important sexual topics and issues. However, there are few reports of retention, and it is also evident that knowledge is necessary but not sufficient for behavior change.

It cannot be expected that exposure to one lecture on birth control sometime during a Navy career will be sufficient to ensure knowledgeable use of contraceptives. In order for such information to be retained, it must be stated more than once. A comprehensive sex education program would last throughout the at-risk years, with continued repetition of important information.

The sex education course introduced into the Navy Recruit Training Curriculum in Orlando, Florida in 1988 covers three class periods and deals with the following topics: male and female reproductive systems, sexually transmitted diseases, pregnancy and parenting issues/consequences as an active duty parent, and contraception. Three sessions are unlikely to provide sufficient time to absorb this information and, based on the literature, there is little evidence that a one-shot dose of sex education will have any lasting effect.

An 8-hour sex education course was designed for Marine recruits by Jane Hiatt and Ellen Wagman as a response to the problems young Marines face with unplanned pregnancy (Royle et al., 1986). It is titled "Making decisions about sex, birth control, and parenthood: A curriculum for Marine men and women" and covers the topics of communication skills, reproductive anatomy and physiology, contraception, decision-making, pregnancy alternatives, and responsibilities of parenthood. This curriculum begins with the assumption that these recruits are sexually active and stresses the importance of making informed decisions about the future and, through role playing,

attempts to paint a realistic picture of a young Marine's options. More important, it imparts skills in how to talk to a partner about sex. Unfortunately, the course has never been implemented so its effectiveness is unknown.

2. It must change attitudes and beliefs and must instill a desire to avoid pregnancy.

It is clear that access to information about sexual subjects is available and that attitudes and beliefs about appropriate sexual behavior are not manifested in actual behavior. It is also clear that traditional sex education does little to change beliefs; that even if it did, this would not necessarily translate into a change in behavior.

One problem is that the known negative consequences of unmarried pregnancy are not perceived as such by at-risk women. While teenage pregnancy is a problem from a societal point of view, it may not be so negative from the girl's view of the world (Height, 1985). As stated above, Freeman et al. (1980) reported that many black adolescents did not view teenage parenthood in a negative light. Thus, sex educators must determine what benefits are derived by unplanned pregnancy and possible motherhood. Researchers suspect low self-esteem, need for affection, and general hopelessness about the future may cause some teenagers to engage in sexual activity, and the same desire to be loved which leads to unprotected sex may prompt some young women to keep children they cannot raise adequately. Until these incentives are identified and countered, sex education will continue to have little effect on the population most at risk.

Similarly, for a single enlisted woman pregnancy may not be viewed as having negative effects. The Navy must investigate possible incentives for pregnancy in this group. While the notion is widely held that female sailors in ships become pregnant to avoid a deployment or to be assigned to shore duty, there are no data as yet to support this belief. Several medical officers aboard Navy ships have suggested that these women are not motivated on a conscious level to become pregnant. Rather, the condition appears to be happenstance, serving no particular purpose, and causing little grief.

If pregnancy is being used to forestall deployment or to secure a discharge from the Navy, it provides an incentive not to use birth control effectively, and no amount of sex education will change this behavior. If, however, pregnancy is accidental, workshops on life cycle planning may have a desired effect.

3. It must provide readily available health services.

The school-based clinic model has demonstrated effectiveness, suggesting that adolescents must have health services available to them in such a way that they do not have to "work" to obtain what they need. In addition, the follow-up services provided by some clinics help to deal with the general problem of irresponsibility, assuring greater adherence to contraception. Within the Navy, follow-up could be done by health care providers during gynecological examinations. That is, those women without regularly spaced prescriptions for oral contraceptives could be asked whether they are sexually active and what method of birth control is being used.

The Navy could take action to make responsible sex easier to achieve. Base clinics, in addition to regional medical centers, should provide contraceptives. They should offer appointments in the evening so that sailors need not interrupt their work day to obtain health services. Contraceptives of all types and pregnancy kits should be available at no charge. The printed instructions on whom to call for results of the test

should include local telephone numbers for pregnancy counseling, adoption agencies, and an abortion referral service.

The current state of sex education in the Navy is sufficiently similar to the traditional public school format to suggest that little reduction in pregnancy rates will result. Knowledge of sexual matters is a necessary, but not sufficient, prerequisite for responsible sexual behavior. Each recruit must be given the incentive to postpone pregnancy until a stable family environment can be provided. Young people need to be helped to make informed, rational decisions about their future and provided with the means of preventing pregnancies that are unplanned.

REFERENCES

Adame, D. D. (1985). On the effects of sex education: A response to those who would say it promotes teenage pregnancy. Health Education, Oct-Nov, 8-10.

Adde, N. (1988, May 9). Ready, willing, and able to serve? Navy Times, 57, 62-63.

Angrist, S. S. (1966). Communication about birth control: An exploratory study of freshman girls' information and attitudes. Journal of Marriage and the Family, 28, 284-286.

Beck, J. G., & Davies, D. K. (1987). Teen contraception: A review of perspectives on compliance. Archives of Sexual Behavior, 16, 337-368.

Benson, M. D., Perlman, C., & Sciarra, J. J. (1986). Sex education in the city: Learning and retention. Journal of the American Medical Association, 255, 43-47.

Centers for Disease Control. (1985). Teenage pregnancy and fertility trends--United States, 1974, 1980. MMWR, 34, 277-280.

Clark, S. D., Zabin, L. S., & Hardy, J. B. (1984). Sex, contraception, and parenthood experience and attitudes among urban black young men. Family Planning Perspectives, 16, 77-82.

Coblinger, W. G. (1974). Pregnancy in the single adolescent girl: The role of cognitive functions. Journal of Youth and Adolescence, 3, 17-29.

Cohen, S. J. (1983). Intentional teen-age pregnancies. Journal of School Health, 53, 210-211.

Cvetkovich, G., Grote, B., Bjorseth, A., & Sarkissian, J. (1975). On the psychology of adolescents' use of contraceptives. Journal of Sex Research, 11, 256-270.

Dawson, D. A. (1986). The effects of sex education on adolescent behavior. Family Planning Perspectives, 18, Jul-Aug, 162-170.

Dryfoos, J. G. (1984). A new strategy for preventing unintended teenage childbearing. Family Planning Perspectives, 16, 193-195.

Dryfoos, J. G. (1985). School-based clinics: A new approach to preventing teenage pregnancy? Family Planning Perspectives, 17, Mar-Apr, 70-75.

Earle, J. R., & Perricone, P. J. (1986). Premarital sexuality: A ten-year study of attitudes and behavior on a small university campus. The Journal of Sex Research, 22, 304-310.

Engel, J. W. (1983). Sex education of adults: An evaluation of a correspondence course approach. Family Relations, 32, 123-128.

Fine, M. (1988). Sexuality, schooling, and adolescent females: The missing discourse of desire. Harvard Educational Review, 58, 29-53.

Finkel, M., & Finkel, D. (1975). Sexual and contraceptive knowledge, attitudes, and behavior of male adolescents. Family Planning Perspectives, 7, 256-260.

Finkel, M. L., & Finkel, S. (1985). Sex education in high school. Society, Nov/Dec, 48-52.

Forrest, J. D. (1987a). American women: A sexual profile. Contemporary Ob/Gyn, 29, (Special Issue), 75-82.

Forrest, J. D. (1987b). Unintended pregnancy among American women. Family Planning Perspectives, 19, 76-77.

Freeman, E., Rickels, K., Huggins, G., Mudd, E., Garcia, C., & Dickens, H. (1980). Adolescent contraceptive use: Comparisons of male and female attitudes and information. American Journal of Public Health, 70, 790-797.

Furstenberg, F. F., Moore, K. A., & Peterson, J. L. (1985). Sex education and sexual experience among adolescents. American Journal of Public Health, 75, 1331-1332.

Glenn, J., & Moore, T. (1988). Identification of antepartum risk factors among single pregnant servicemembers (Unpublished manuscript). San Diego: Balboa Naval Hospital.

Glick, P. C. (1984). Marriage, divorce, and living arrangements: Prospective changes. Journal of Family Issues, 5, 7-26.

Gunderson, M. P., & McCary, J. L. (1980). Effects of sex education on sex information and sexual guilt, attitudes, and behavior. Family Relations, 29, 375-379.

Hayes, R. L., & Cryer, N. (1987). When adolescents give birth to children: A developmental approach to the issue of teen pregnancy. Counseling and Human Development, 20, 1-11.

Height, D. I. (1985, March). What must be done about children having children? Ebony, 40, 76-84.

Herz, E. J., Reis, J. S., & Barbera-Stein, L. (1986). Family life education for young teens: An assessment of three interventions. Health Education Quarterly, 13, 201-221.

Hoch, L. L. (1971). Attitude change as a result of sex education. Journal of Research in Science Teaching, 8, 363-367.

Jones, E. F., Forrest, J. D., Goldman, N., Henshaw, S. K., Lincoln, R., Rosoff, J. I., Westoff, C. F., & Wulf, D. (1985). Teenage pregnancy in developed countries: Determinants and policy implications. Family Planning Perspectives, 17, 53-63.

Jorgensen, S. R., & Alexander, S. J. (1983). Research on adolescent pregnancy risk: Implications for sex education programs. Theory Into Practice, 22, 125-132.

Kegeles, S. M., Adler, N. E., & Irwin, C. E. (1988). Sexually active adolescents and condoms: Changes over one year in knowledge, attitudes, and use. American Journal of Public Health, 78, 460-461.

Kenney, A. M., & Orr, M. T. (1984). Sex education: An overview of current programs, policies, and research. Phi Delta Kappan, 65, 491-496.

Kilmann, P. R., Wanlass, R. L., Sabalis, R. F., & Sullivan, B. A. (1981). Sex education: A review of its effects. Archives of Sexual Behavior, 10, 177-205.

Kirby, D. (1980). The effects of school sex education programs: A review of the literature. Journal of School Health, 50, 559-563.

Kirby, D. (1984). Sexuality education: An evaluation of programs and their effectiveness. Santa Cruz, CA: Network Publications.

Kirby, D. (1985). Sexuality education: A more realistic view of its effects. Journal of School Health, 55, 421-424.

Kirby, D. (1986). Comprehensive school-based clinics: A growing movement to improve adolescent health and reduce teen-age pregnancy. Journal of School Health, 56, 289-291.

Kisker, E. (1984). The effectiveness of family planning clinics in serving adolescents. Family Planning Perspectives, 16, 212-218.

Klerman, L. V. (1980). Adolescent pregnancy: A new look at a continuing problem. American Journal of Public Health, 70, 776-778.

Kruger, P. S. (1979). Risk factors and pregnancy outcome among Air Force women. Military Medicine, 9, 788-791.

Leo, J. (1986, November 24). Sex and schools. Time, 54-63.

Lewis, C. E., & Lewis, M. A. (1984). Peer pressure and risk-taking behaviors in children. American Journal of Public Health, 74, 580-584.

Marini, M. (1984). Women's educational attainment and the timing of entry into parenthood. American Sociological Review, 49, 491.

Marsiglio, W., & Mott, F. L. (1986). The impact of sex education on sexual activity, contraceptive use, and premarital pregnancy among American teenagers. Family Planning Perspectives, 18, 151-162.

Matthews, W. (1988, February 1). Unmarried pregnancy a concern. Navy Times, 1.

McClellan, M. C. (1987). Teenage pregnancy. Phi Delta Kappan, 68, 789-792.

Morrison, D. M. (1985). Adolescent contraceptive behavior: A review. Psychological Bulletin, 98, 538-568.

Norton, A. J., & Moorman, J. E. (1987). Current trends in marriage and divorce among American women. Journal of Marriage and the Family, 49, 3-14.

Orr, M. T. (1982). Sex education and contraceptive education in U.S. public schools. Family Planning Perspectives, 14, 304-313.

Parcel, G. S., & Luttman, D. (1981). Evaluation of a sex education course for young adolescents. Family Relations, 30, 55-60.

Rogers, V., Merriam, K., & Munson, M. (1983). Sex education: Curriculum issues. Journal of Research and Development in Education, 16, 45-51.

Royle, M. H., Molof, M. J., Winchell, J. D., & Gerrard, M. (1986). Development of a pilot sex education program for enlisted Marines (NPRDC Tech. Rep. 86-9). San Diego: Navy Personnel Research and Development Center.

Ryan, G. M., & Sweeney, P. J. (1980). Attitudes of adolescents toward pregnancy and contraception. American Journal of Obstetrics and Gynecology, 137, 358-362.

Scales, P. (1986). The changing context of sexuality education: Paradigms and challenges for alternative futures. Family Relations, 35, 265-274.

Scales, P. (1987). How we can prevent teen pregnancy (and why it's not the real problem). Journal of Sex Education and Therapy, 13(1), 12-15.

Scales, P., & Kirby, D. (1981). A review of exemplary sex education programs for teenagers offered by nonschool organizations. Family Relations, 30, 238-245.

Shuit, D. (1988, September 27). Governor changes mind, sings bill offering tax credits for child care. Los Angeles Times, p. 3.

Sonenstein, F. L., & Pittman, K. J. (1984). The availability of sex education in large city school districts. Family Planning Perspectives, 16(1), 19-25.

Spanier, G. B. (1978). Sex education and premarital sexual behavior among American college students. Adolescence, 13, 659-674.

Spillane, R. (1987). Women in ships: Can we survive? Proceedings, 43-46.

Stout, J. W., & Rivara, F. P. (1989). Schools and sex education: Does it work? Pediatrics, 83, 375-379.

Strong, B. (1972). Ideas of the early sex education movement in America 1890-1920. History of Education Quarterly, Summer, 129-161.

Tanfer, K., & Horn, M. C. (1985). Contraceptive use, pregnancy and fertility patterns among single American women in their 20s. Family Planning Perspectives, 17, 10-19.

Ventura, S. J. (1988). Births of Hispanic parentage, 1985. NCHS Monthly Vital Statistics Report, 36(11), Supplement, 1-3.

Vincent, M. L., Clearie, A. F., & Schluchter, M. D. (1987). Reducing adolescent pregnancy through school and community-based education. Journal of the American Medical Association, 257, 3382-3386.

Voss, J. R. (1980). Sex education: Evaluation and recommendation for future study. Archives of Sexual Behavior, 9, 37-59.

Wallis, C. (1985, December 9). Children having children. Time, 78-90.

Watter, D. N. (1987). Teaching about homosexuality: A review of the literature. Journal of Sex Education and Therapy, 13(2), 63-66.

Whatley, M. H. (1987). Biological determinism and gender issues in sexuality education. Journal of Sex Education and Therapy, 13(2), 26-29.

Zabin, L. S., Hirsch, M. B., Smith, E. A., & Hardy, J. B. (1984). Adolescent sexual attitudes and behavior: Are they consistent? Family Planning Perspectives, 16, 181-185.

Zabin, L., Hirsch, M., Smith, E., Streett, R., & Hardy, J. (1986). Evaluation of a pregnancy prevention program for urban teenagers. Family Planning Perspectives, 18(3), 119-126.

Zabin, L., Kantner, J., & Zelnik, M. (1979). The risk of adolescent pregnancy in the first months of intercourse. Family Planning Perspectives, 11, 215.

Zelnik, M., & Kantner, J. F. (1979). Reason for non-use of contraception by sexually active women aged 15-19. Family Planning Perspectives, 11, 289-296.

Zelnik, M., & Kim, Y. (1982). Sex education and its association with teenage sexual activity, pregnancy, and contraceptive use. Family Planning Perspectives, 14, 117-126.

Zuckerman, M., Tushup, R., & Finner, S. (1976). Sexual attitude and experience: Attitude and personality correlates and changes produced by a course in sexuality. Journal of Consulting and Clinical Psychology, 44, 7-19.

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